

We claim:

1. A method for the direct CTP preparation of offset printing plates using a CTP liquid, said method comprising the steps of:

applying a pre-treatment liquid comprising an ion donor and at least one of a polymer swelling reagent and a coalescence reagent on to a surface of a recording medium to provide a pretreated recording medium;

jetting the CTP liquid according to a digital image generated by a computer system;

drying the pretreated recording medium having the CTP liquid thereon at high temperature.

2. The method of claim 1 wherein said application step applies a layer of up to approximately 10 $\mu$ m thickness.

3. The method of claim 1 wherein said recording medium is grained anodized aluminum.

4. The method of claim 1 wherein said recording medium is polyester.

5. The method of claim 1 further comprising, after said applying step, allowing said pre-treatment liquid to partially dry.

6. A pre-treatment liquid for offset printing plate applications using direct inkjet CTP, said liquid comprising:

an ion donor and at least one of a polymer swelling reagent and a coalescence reagent.

7. The pre-treatment liquid of claim 6 wherein said liquid is a solution.
8. The pre-treatment liquid of claim 6 wherein said liquid is an organic phase emulsion in water, wherein at least one of said swelling reagent and said coalescence reagent are in said organic phase which is emulsified in water containing said polyvalent metallic salt.
9. The pre-treatment liquid of claim 6 wherein said ion donor is an inorganic acid.
10. The pre-treatment liquid of claim 9 wherein said inorganic acid is comprised of an acid from the group of phosphoric, sulfuric, nitric and hydrochloric acid.
11. The pre-treatment liquid of claim 9 where the pH is approximately between 0 and 4.
12. The pre-treatment liquid of claim 9 where the pH is approximately between 1 and 3.
13. The pre-treatment liquid of claim 6 wherein said ion donor is a polyvalent metallic salt.

14. The pre-treatment liquid of claim 13 wherein said polyvalent metallic salt includes at least one of divalent and trivalent metallic cations.
15. The pre-treatment liquid of claim 14 wherein said metallic cations are chosen from the group consisting of:  $\text{Ca}^{+2}$ ,  $\text{Zn}^{+2}$ ,  $\text{Ba}^{+2}$ ,  $\text{Mg}^{+2}$ ,  $\text{Al}^{+3}$ ,  $\text{Fe}^{+3}$  and  $\text{Cr}^{+3}$ .
16. The pre-treatment liquid of claim 15 wherein said cation comprises between approximately 2% to approximately 25% of said pre-treatment liquid.
17. The pre-treatment liquid of claim 15 wherein said cation comprises between approximately 3% to approximately 20% of said pre-treatment liquid.
18. The pre-treatment liquid of claim 13 wherein said polyvalent metallic salt is comprised of an anion from the group of:  $\text{Cl}^-$ ,  $\text{I}^-$ ,  $\text{Br}^-$ ,  $\text{NO}_3^-$ ,  $\text{HCOO}^-$ ,  $\text{CH}_3\text{CH}_2\text{COO}^-$  and  $\text{CH}_3\text{COO}^-$ .
19. The pre-treatment liquid of claim 6 wherein said polymer swelling reagent is chosen from the group consisting of: N-methyl pyrrolidone, organic esters including, ethyl acetate, propyl acetate, butyl acetate, ethyl lactate, butyl lactate, ketones including acetone and methyl-ethyl-ketone and cyclic ethers including tetrahydrofuran.
20. The pre-treatment liquid of claim 6 wherein said polymer swelling reagent comprises between approximately 0.1% to approximately 15% by weight of said pre-treatment liquid.

21. The pre-treatment liquid of claim 6 wherein said polymer swelling reagent comprises between approximately 0.5% to approximately 7.5% by weight of said pre-treatment liquid.

22. The pre-treatment liquid of claim 6 wherein said coalescence reagent is chosen from the group consisting of: butyl glycol, butyl carbitol, glycol ethers including: di(propylene glycol) methyl ether, tripropylene glycol mono methyl ether, propylene glycol mono methyl ether, propylene glycol mono propyl ether, and dipropylene glycol dimethyl ether.

23. The pre-treatment liquid of claim 6 wherein said coalescence reagent comprises between approximately 0.1% to approximately 12% by weight of said pre-treatment liquid.

24. The pre-treatment liquid of claim 6 wherein said coalescence reagent comprises between approximately 0.5% to approximately 6% by weight of said pre-treatment liquid.